

Impact of Covid-19 On Level of Depression, Anxiety and Stress on the Patients with Lower Limb Amputation: A Comparative Study Between Prosthetic & Non-Prosthetic Users

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Abstract - The present paper aims to study the impact of pandemic COVID-19 on specific population of lower limb amputees and whether this has any significant difference between the prosthetic and non-prosthetic user in context of depression, anxiety, and stress. A sample of 50 Lower Limb Amputee patients was collected from rehabilitation unit of Indian Spinal Injuries Centre & Bhagwan Mahaveer Viklang Sahayata Samiti, New Delhi. The sample included 25 Prosthetic users and 25 non-Prosthetic users. In this study data was collected by convenient sampling technique during the COVID-19 pandemic. Depression, anxiety, and stress were evaluated by Depression, Anxiety and Stress Scale - 21 Items (DASS-21). The scores of depressions, anxiety and stress were evaluated to find out the differences among Prosthetic & Non-Prosthetic Users. Data recorded was analyzed using SPSS data analysis software. An Independent t-test was used to compare the difference among both the prosthetic & non-prosthetic users with lower limb amputation in terms of depression, anxiety, and stress. There was significant difference seen among the non-prosthetic users with higher level of depression, anxiety and stress as compared to prosthetic users with lower limb amputation. The key findings of the study suggest that the non-prosthetic users with lower limb amputation tend to have higher level of depression, anxiety, and stress in comparison of prosthetic users with lower limb amputation.

Index Terms - Lower limb amputation, prosthetics, depression, anxiety, stress, DASS-21, COVID-19.

INTRODUCTION

The COVID-19 pandemic has had a huge effect on mental health in the general population⁷. A wide range of psychological outcomes have been observed during the Virus outbreak, at individual, community, national, and international levels. At the individual level, people are more likely to experience fear of getting sick or dying, feeling helpless, and being stereotyped by others¹⁰. The pandemic has had a negative impact on general mental health, potentially leading to psychological crises¹⁵. In a population, nervousness and anxiety affect almost all. According to recent research, people who are held in isolation or quarantine suffer from severe anxiety, frustration, uncertainty, and stress¹¹. In general, all of the studies that looked into psychological disorders during the COVID-19 pandemic found that those who were affected had a variety of mental trauma symptoms, including emotional distress, depression, stress, mood swings, irritability, insomnia, attention deficit hyperactivity disorder, post-traumatic stress, and anger^{11, 13, 4}. Frequent media exposure may also cause distress, according to research¹⁴. Nonetheless, it is difficult to predict the psychological and emotional effects of COVID-19 in the current situation.

Amputation is a major health burden on the families, society, and on medical services as well. The prevalence of psychiatric disorders among amputees has been found to be in the range of 32% to 84% including depression rates 10.4%–63%¹.

The American Psychiatric Association defines depression as “feelings of extreme sadness or despair,

last for at least two weeks or longer an interfering with activities of daily living". Depression is psychological disorder that is linked with low mood, loss of interest or joy, sentiments of blame or low self-esteem, aggravated rest or hunger, low vitality, and poor fixation. These issues can get to be ceaseless or intermittent and lead to generous hindrances in a singular's capacity to deal with ordinary obligations. Mostly it leads to suicide, a terrible casualty connected with the loss of around 850- 000 thousand lives each year^{9, 13}.

Anxiety is one of the emotions everyone experiences under stress due to physical, social, monetary, and mental issues. Anxiety as a drive most of the time helps us to dynamically do some activity to eliminate the reason of anxiety, however if anxiety becomes unbearable then it can lead to once in a stage being unable to perform anything^{2, 5}.

Depression is associated with higher levels of activity limitation, easily having vulnerable feelings, and poorer self-related health. Higher levels of pain and anxiety are also risk factors for depression in amputees⁹.

As depression and anxiety is already becoming a very common problem these days and now due the on-going pandemic the problem of depression, anxiety and stress is increasing, this is also affecting the life of people who are already underprivileged with problems like amputations. As the studies shows limitations in activity and inability to perform anything leads to depression anxiety and associated stress, therefore there was need to study that whether the use of prosthetics have any further impact on not only the physical wellbeing but mental wellbeing of a person with amputation.

Hence, the objective of this research is to compare & determine the prevalence of depression, anxiety & stress among prosthetic and non- prosthetics user so as to create an awareness particularly in the time of COVID-19.

METHODOLOGY

This research study was conducted to examine to compare the components of depression, anxiety, and stress among prosthetic and non- prosthetics user specifically in difficult times of COVID-19. The current pandemic COVID-19 is contributing to elevating the level of depression, anxiety and stress which is already prevailing in society and particularly

effecting people with amputations¹². Limited mobility may further lead to depression, anxiety & associated stress & in today's scenario leading to serious mental ailments even turning out as suicide. Higher rates of depression, anxiety & stress can lead to a dissatisfactory and non-fulfilling life. Therefore, there was a need to study the rate of depression, anxiety & stress among prosthetic & non prosthetic user because there is evidence that amputation is already traumatic itself & it can further lead to a depressing life full of anxiety and stress. Therefore, there was need to study the level of depression, anxiety, and stress among prosthetic & non- prosthetic users so as to find whether there is any difference after using prosthesis on the level of depression, anxiety, and stress.

About 50 amputees participated in the study in which 25 amputees were already prosthetic users and 25 amputees were non prosthetic users.

The data was collected from rehabilitation department Prosthetics & Orthotics unit from Indian Spinal Injuries Centre, New Delhi and Bhagwan Mahavir Viklang Sahayata Samiti, New Delhi. The data was collected by Non- Probability Convenient Sampling. The research design was survey study. The data was Collected after taking consent from the subject. The data was collected by dividing the sample into two groups –group one is prosthetics user whereas group-2 is non-prosthetic users. The screening of subjects was done on the basis of inclusion criteria which included age- 18-60, Lower limb amputees including amputation from hip, knee, ankle & foot, prosthetics user (group-1) non prosthetic user (first time visiting the rehabilitation unit non-prosthetics user group-2). Exclusion criteria included cogitatively impaired.

Comparison between the level of depression, anxiety and stress among prosthetics and non- prosthetics users was done using the Depression, Anxiety and Stress Scale (DASS-21).

After obtaining the scores for DASS-21 scale, the scores were evaluated, and result was obtained.

RESULTS

The data collected was obtained by following the standard protocol analyzed with the help of SPSS. The analyses involved Mean, Standard deviation, and T test. A total of 50 subjects who was all lower limb amputees, in which 25 subjects was prosthetic users

and other 25 subjects was non-prosthetic users. The subjects were recruited for the study after checking and screening for the inclusion criteria.

DASS-21

Depression

To see the significant difference in mean of Depression among prosthetics and non-prosthetics users, we applied independent sample t-test. Here, p-value is less than 0.001 shows that there is a significant difference in Depression among prosthetic and non-prosthetics users. Moreover, the mean of Depression of non-prosthetic users is significantly greater than prosthetic users.

Mean Depression scores across prosthetic and non-prosthetic users:

Variables	Prosthetic user (N=25)	Non-Prosthetic user (N=25)	p-value
Mean Depression (SD)	15.08± 4.51	25.28± 4.96	<0.001

SD- Standard deviation

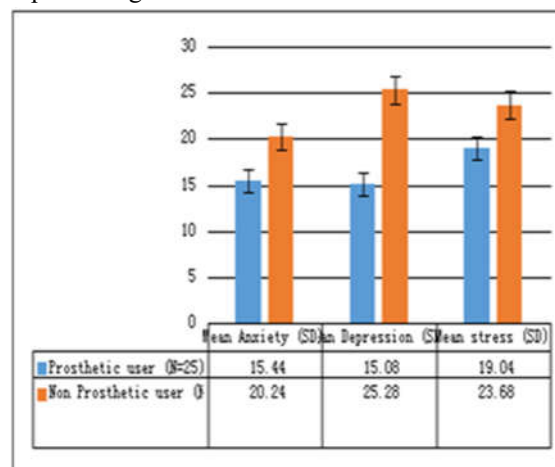
The graph of mean of Depression between prosthetic & non-prosthetic users is given below. Here error bars representing the 95% confidence interval of mean.

Stress among prosthetic & non-prosthetic users. Moreover, the mean of Stress of non-prosthetic users is significantly greater than prosthetic users.

Variables	Prosthetic user (N=25)	Non-Prosthetic user (N=25)	p-value
Mean stress (SD)	19.04± 4.17	23.68± 4.15	< 0.001

SD- Standard Deviation

The graph of mean of Stress among prosthetic & non-prosthetic users is given below. Here error bars representing the 95% confidence interval of mean.



Anxiety

To see the significant difference in mean of Anxiety among prosthetic and non-prosthetic user, we applied independent sample t-test. Here, p-value is 0.001 shows that there is a significant difference in Anxiety among prosthetic and non-prosthetic users. Moreover, the mean of Anxiety of non-prosthetic users is significantly greater than prosthetic users.

Variables	Prosthetic user (N=25)	Non-Prosthetic user (N=25)	p-value
Mean Anxiety (SD)	15.44± 4.98	20.24± 4.98	0.001

SD- Standard Deviation

The graph of mean of Anxiety among prosthetic & non-prosthetic users is given below. Here error bars representing the 95% confidence interval of mean.

DISCUSSION

Surviving a lower limb amputation means facing major challenges. Walking with prosthesis expends significantly more energy than walking with both natural limbs and decreased physical abilities are likely to have significant implications for employment which can lead to financial strain, isolation, and loss of self esteem^{11, 13}.

An individual must adjust to changed appearance, becoming used to a body both with and without a prosthesis⁹.

Research indicates higher levels of stress, anxiety, depression, and even suicidal tendencies in lower limb amputees.^{13,4} Studies found that anxiety is a feeling of unpleasant state of inner confusion, often followed by nervous behavior, while depression is a common mental disorder evident from unhappiness, loss of concern, feelings of shame or low self-esteem, troubled sleep or hunger, drowsiness or insomnia, and reduced attention. Likewise, stress is defined as the body's response to a demand, caused either by, or as a result of, pleasing or unpleasing conditions¹⁴.

Stress

To see the significant difference in mean of Stress among prosthetic & non-prosthetic user, we applied independent sample t-test. Here, p-value is less than 0.001 shows that there is a significant difference in

Study by Muhammad Kamran et al found that the level of self-esteem was low among majority of the participants and psychological well-being was found to be poor⁶. Self-esteem is generally considered the positive or negative orientation toward oneself i.e., self-worth. Self-esteem has three dimensions based on worth, efficacy and authenticity. An important relationship was found among body image and life satisfaction, signifying that when an amputee senses negative orientation regarding his or her body image, he or she is found to be less fulfilled with his or her life⁶.

Study by Murray CD et al reported association between body image and satisfaction related to prosthesis and pointed towards the importance of the aesthetic parts of prosthesis in females and functional aspects in males³.

The present study was aimed to study the impact of pandemic COVID-19 on specific population of lower limb amputees and whether this has any significant difference between the prosthetic and non-prosthetic users in context of depression, anxiety, and stress.

The level of depression, anxiety and stress among subjects was assessed through DASS-21 scale. The result of the study suggested that out of 50 subjects who participated in the survey study, 25 subjects was prosthetic users with minimum score of depression being 4.51 and maximum score being 15.08 and mean of depression was $15.08 \div 4.51$ with p-value <0.001 . The mean score of depression in non-prosthetic users with minimum score 4.96 and maximum score 25.28 and mean of depression was $25.28 \div 4.96$ with p-value <0.001 . This indicates the mean of depression of non-prosthetic users is significantly greater than prosthetic users.

The result for anxiety among prosthetic users was minimum score being 4.98 and maximum score being 15.44 with p-value 0.001.

The mean score for anxiety among non-prosthetic users was minimum score 4.98 and maximum score being 20.24 with p-value 0.001. This indicates the mean of anxiety of non-prosthetic users is significantly greater than prosthetic users.

The result for stress among prosthetic users was minimum score being 4.17 and maximum score being 19.04 with p-value <0.001 . The mean score for stress among non-prosthetic users was minimum score being 4.15 and maximum score being 23.68 with p-value <0.001 . This indicates the mean of stress of non-

prosthetic users is significantly greater than prosthetic users.

Therefore, the present studies shows that non-prosthetic users with lower limb amputation have higher level of depression, anxiety and stress as compared to males with lower limb amputation. Whilst amputation can be viewed as a constructive procedure leading to the fitting of an artificial limb and a return to active functioning. Decreased physical abilities due to amputation are likely to have significant implications for employment which can lead to financial strain, isolation, and loss of self esteem⁹.

The COVID-19 pandemic and the resulting economic recession have negatively affected many people's mental health. During the pandemic, about 4 in 10 adults in the U.S. have reported symptoms of anxiety or depressive disorder, a share that has been largely consistent, up from one in ten adults who reported these symptoms from January to June 2019. For people with chronic illness in particular, the already high likelihood of having a concurrent mental health disorder may be exacerbated by their vulnerability to severe illness from COVID-19⁸.

As studies already states that the prevalence of psychiatric disorders among amputees has been found to be in the range of 32% to 84% including depression rates 10.4%–63%, level of depression, anxiety and stress is more common among amputees as compared to general population⁸. And during Covid-19 it has further impacted population overall.

CONCLUSION

The key findings of the study suggest that the non-prosthetic users with lower limb amputation tend to have higher level of depression, anxiety and stress in comparison of prosthetic users with lower limb amputation.

This may reflect that with use of prosthesis there is improvement in quality of life which in turns leads to mental satisfaction by providing self-dependency.

Decreased physical abilities are likely to have significant implications for employment which can lead to financial strain, isolation, and loss of self-esteem, which may act as one of the causes of higher rates of depression, anxiety & stress among people who are non-prosthetic users particularly during difficult time of COVID-19 pandemic.

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